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Layer (type) Output Shape Param #

=================================================================

input\_16 (InputLayer) [(None, 224, 224, 3)] 0

block1\_conv1 (Conv2D) (None, 224, 224, 64) 1792

block1\_conv2 (Conv2D) (None, 224, 224, 64) 36928

block1\_pool (MaxPooling2D) (None, 112, 112, 64) 0

block2\_conv1 (Conv2D) (None, 112, 112, 128) 73856

block2\_conv2 (Conv2D) (None, 112, 112, 128) 147584

block2\_pool (MaxPooling2D) (None, 56, 56, 128) 0

block3\_conv1 (Conv2D) (None, 56, 56, 256) 295168

block3\_conv2 (Conv2D) (None, 56, 56, 256) 590080

block3\_conv3 (Conv2D) (None, 56, 56, 256) 590080

block3\_pool (MaxPooling2D) (None, 28, 28, 256) 0

block4\_conv1 (Conv2D) (None, 28, 28, 512) 1180160

block4\_conv2 (Conv2D) (None, 28, 28, 512) 2359808

block4\_conv3 (Conv2D) (None, 28, 28, 512) 2359808

block4\_pool (MaxPooling2D) (None, 14, 14, 512) 0

block5\_conv1 (Conv2D) (None, 14, 14, 512) 2359808

block5\_conv2 (Conv2D) (None, 14, 14, 512) 2359808

block5\_conv3 (Conv2D) (None, 14, 14, 512) 2359808

block5\_pool (MaxPooling2D) (None, 7, 7, 512) 0

flatten\_7 (Flatten) (None, 25088) 0

dense\_7 (Dense) (None, 1) 25089

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Total params: 14,739,777

Trainable params: 25,089

Non-trainable params: 14,714,688

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Epoch 1/100

55/55 [==============================] - 54s 927ms/step - loss: 0.3133 - accuracy: 0.8733 - val\_loss: 0.2120 - val\_accuracy: 0.9171 - lr: 0.0010

Epoch 2/100

55/55 [==============================] - 51s 923ms/step - loss: 0.1237 - accuracy: 0.9597 - val\_loss: 0.1089 - val\_accuracy: 0.9654 - lr: 0.0010

Epoch 3/100

55/55 [==============================] - 50s 902ms/step - loss: 0.0788 - accuracy: 0.9821 - val\_loss: 0.1132 - val\_accuracy: 0.9654 - lr: 0.0010

Epoch 4/100

55/55 [==============================] - 50s 902ms/step - loss: 0.0612 - accuracy: 0.9844 - val\_loss: 0.0807 - val\_accuracy: 0.9654 - lr: 0.0010

Epoch 5/100

55/55 [==============================] - 50s 898ms/step - loss: 0.0464 - accuracy: 0.9902 - val\_loss: 0.0726 - val\_accuracy: 0.9747 - lr: 0.0010

Epoch 6/100

55/55 [==============================] - 49s 892ms/step - loss: 0.0386 - accuracy: 0.9937 - val\_loss: 0.0680 - val\_accuracy: 0.9724 - lr: 0.0010

Epoch 7/100

55/55 [==============================] - 50s 896ms/step - loss: 0.0314 - accuracy: 0.9960 - val\_loss: 0.0662 - val\_accuracy: 0.9724 - lr: 0.0010

Epoch 8/100

55/55 [==============================] - 50s 900ms/step - loss: 0.0271 - accuracy: 0.9960 - val\_loss: 0.0628 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 9/100

55/55 [==============================] - 50s 902ms/step - loss: 0.0227 - accuracy: 0.9971 - val\_loss: 0.0597 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 10/100

55/55 [==============================] - 50s 900ms/step - loss: 0.0198 - accuracy: 0.9977 - val\_loss: 0.0684 - val\_accuracy: 0.9700 - lr: 0.0010

Epoch 11/100

55/55 [==============================] - 50s 900ms/step - loss: 0.0170 - accuracy: 0.9994 - val\_loss: 0.0597 - val\_accuracy: 0.9747 - lr: 0.0010

Epoch 12/100

55/55 [==============================] - 49s 894ms/step - loss: 0.0155 - accuracy: 0.9988 - val\_loss: 0.0565 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 13/100

55/55 [==============================] - 50s 895ms/step - loss: 0.0141 - accuracy: 0.9988 - val\_loss: 0.0565 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 14/100

55/55 [==============================] - 49s 897ms/step - loss: 0.0121 - accuracy: 0.9994 - val\_loss: 0.0550 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 15/100

55/55 [==============================] - 49s 893ms/step - loss: 0.0105 - accuracy: 1.0000 - val\_loss: 0.0650 - val\_accuracy: 0.9724 - lr: 0.0010

Epoch 16/100

55/55 [==============================] - 49s 895ms/step - loss: 0.0099 - accuracy: 1.0000 - val\_loss: 0.0531 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 17/100

55/55 [==============================] - 50s 907ms/step - loss: 0.0087 - accuracy: 1.0000 - val\_loss: 0.0519 - val\_accuracy: 0.9793 - lr: 0.0010

Epoch 18/100

55/55 [==============================] - 50s 914ms/step - loss: 0.0082 - accuracy: 1.0000 - val\_loss: 0.0514 - val\_accuracy: 0.9747 - lr: 0.0010

Epoch 19/100

55/55 [==============================] - 49s 895ms/step - loss: 0.0075 - accuracy: 1.0000 - val\_loss: 0.0541 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 20/100

55/55 [==============================] - 50s 911ms/step - loss: 0.0068 - accuracy: 1.0000 - val\_loss: 0.0496 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 21/100

55/55 [==============================] - 50s 901ms/step - loss: 0.0062 - accuracy: 1.0000 - val\_loss: 0.0496 - val\_accuracy: 0.9770 - lr: 0.0010

Epoch 22/100

55/55 [==============================] - 49s 893ms/step - loss: 0.0057 - accuracy: 1.0000 - val\_loss: 0.0595 - val\_accuracy: 0.9793 - lr: 0.0010

Epoch 23/100

55/55 [==============================] - 49s 890ms/step - loss: 0.0054 - accuracy: 1.0000 - val\_loss: 0.0542 - val\_accuracy: 0.9793 - lr: 0.0010

Epoch 24/100

55/55 [==============================] - 49s 893ms/step - loss: 0.0050 - accuracy: 1.0000 - val\_loss: 0.0499 - val\_accuracy: 0.9770 - lr: 1.0000e-04

Epoch 25/100

55/55 [==============================] - 50s 901ms/step - loss: 0.0049 - accuracy: 1.0000 - val\_loss: 0.0496 - val\_accuracy: 0.9770 - lr: 1.0000e-04

Epoch 26/100

55/55 [==============================] - 50s 906ms/step - loss: 0.0048 - accuracy: 1.0000 - val\_loss: 0.0494 - val\_accuracy: 0.9770 - lr: 1.0000e-04

Epoch 27/100

55/55 [==============================] - 49s 891ms/step - loss: 0.0048 - accuracy: 1.0000 - val\_loss: 0.0497 - val\_accuracy: 0.9770 - lr: 1.0000e-04

Epoch 28/100

55/55 [==============================] - 49s 895ms/step - loss: 0.0048 - accuracy: 1.0000 - val\_loss: 0.0493 - val\_accuracy: 0.9770 - lr: 1.0000e-04

Epoch 29/100

55/55 [==============================] - 49s 884ms/step - loss: 0.0047 - accuracy: 1.0000 - val\_loss: 0.0495 - val\_accuracy: 0.9770 - lr: 1.0000e-04

Epoch 30/100

55/55 [==============================] - 48s 871ms/step - loss: 0.0047 - accuracy: 1.0000 - val\_loss: 0.0495 - val\_accuracy: 0.9770 - lr: 1.0000e-05

Epoch 31/100

55/55 [==============================] - 49s 891ms/step - loss: 0.0047 - accuracy: 1.0000 - val\_loss: 0.0495 - val\_accuracy: 0.9770 - lr: 1.0000e-05

Epoch 32/100

55/55 [==============================] - 49s 896ms/step - loss: 0.0047 - accuracy: 1.0000 - val\_loss: 0.0495 - val\_accuracy: 0.9770 - lr: 1.0000e-05

Epoch 33/100

55/55 [==============================] - 50s 909ms/step - loss: 0.0047 - accuracy: 1.0000 - val\_loss: 0.0495 - val\_accuracy: 0.9770 - lr: 1.0000e-06

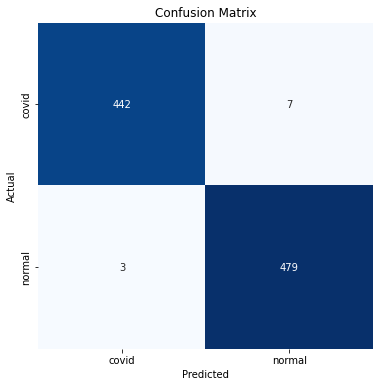
INFO:tensorflow:Assets written to: /content/drive/MyDrive/NadamVGG16Split0.7noAug/assets

Test Loss: 0.05562

Test Accuracy: 98.93%

/usr/local/lib/python3.7/dist-packages/ipykernel\_launcher.py:123: DeprecationWarning: `np.int` is a deprecated alias for the builtin `int`. To silence this warning, use `int` by itself. Doing this will not modify any behavior and is safe. When replacing `np.int`, you may wish to use e.g. `np.int64` or `np.int32` to specify the precision. If you wish to review your current use, check the release note link for additional information.

Deprecated in NumPy 1.20; for more details and guidance: <https://numpy.org/devdocs/release/1.20.0-notes.html#deprecations>



Classification Report:

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precision recall f1-score support

covid 0.99 0.98 0.99 449

normal 0.99 0.99 0.99 482

accuracy 0.99 931

macro avg 0.99 0.99 0.99 931

weighted avg 0.99 0.99 0.99 931

